

REMARKS

The Examiner is thanked for the thorough examination of the present application. The FINAL Office Action, however, continued to reject all examined claims 1-5, 11-15, and 21-25. In response, Applicant submits the foregoing amendments and the following remarks. Specifically, independent claims 1, 11, and 21 have been amended. Applicant requests reconsideration and withdrawal of the rejections for at least the following reasons.

Rejections under 35 U.S.C 112

The Office Action rejected claims 1-5, 11-15, and 21-25 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. Independent claims 1, 11, and 21 have been amended to comply with the enablement requirement, and therefore overcome the rejection. As described, in the section entitled “description of the related art” of the specification, it is disclosed that “customers frequently overestimate demand in order to meet capacity, and the foundry consequently frequently over-commits in order to reduce order and capacity loss.” In the claimed embodiments, a specific part of a demand can be considered as an overestimated part of the demand, and the percentage of the overestimated part of the demand can be defined by analyzing historical information for the demand plans and the purchase orders of each customer.

For example, a customer always requests a demand of 1000 pieces of product A. After analyzing historical information of the customer, it is realized that the customer always purchases an average 700 pieces of product A. Therefore, the demand of the customer can be classified into two types: a low risk part and a high risk part, wherein

the low risk part is 70% of the demand, and the high risk part is 30% of the demand. The high risk part can be considered as the overestimated part of a demand. It is understood that, in some situations, the low risk part and the high risk part may also have possibility of not becoming actual orders.

As previously described in the prosecution of this application, the risk information database is provided in advance, the setting for the risk information can be defined and adjusted according to different requirements and applications. Additionally, in the amended claims, the dividing method is further cited, wherein the low risk demand is obtained by multiplying the first demand by the first percentage, and the high risk demand is obtained by multiplying the first demand by the second percentage. Persons in the art will realize how to divide demand into a low risk portion and a high risk portion. Additionally, the term 'risk' in the claims is well defined, wherein the high risk part is considered as an overestimated part of the first demand, and the first order rate and the second order rate are the possibility of the low risk part and the high risk part to become actual order, respectively.

For at least the foregoing reasons, and in view of the claim amendments made herein, the rejections under U.S.C. 112 should be withdrawn.

Rejections under 35 U.S.C 101

Claims 1-5, 11-15 and 21-25 are rejected under 35 U.S.C. 101. Applicant respectfully requests reconsideration and withdrawal of these rejections for at least the reasons set forth herein.

In Fig. 1 of the application, the manufacturer side 120 of the demand dispatch system 100 includes the allocation planning module 121, and the production line 124. The allocation planning module 121 manages the CASD (capacity available support demand) 123 of each fabrication with production line. It is understood that, although no exact term of 'computer system' or 'electronic device' is imputed from the specification into the claims, however, the allocation planning module and/or the database itself are embodied in hardware components or an electronic device or executed by an electronic device, since software must be combined with an electronic device to control and manage other devices, such as the fabrications and corresponding production lines.

As the U.S. Court of Appeals for the Federal Circuit recently confirmed in its recent decision of *In re Bilski* — F.3d —, 88 U.S.P.Q.2d 1385 (2008):

“... we ... reaffirm that the machine-or-transformation test ... is the governing test for determining patent eligibility of a process under 35 U.S.C. § 101.

...

The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article.

The Court further stated:

In *AT&T*, we rejected a "physical limitations" test and noted that "the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter." 172 F.3d at 1359 (*quoting State St.*, 149 F.3d at 1374). The same reasoning applies when the claim at issue recites fundamental principles other than mathematical algorithms. Thus, the proper inquiry under § 101 is ... whether the claim meets the machine-or-transformation test. As a result, ... a claim that purportedly lacks any "physical steps" but is still tied to a machine or achieves an eligible transformation passes muster under § 101.

The independent claims 1, 11, and 21 (as amended herein) of the present application clearly satisfied these legal standards.

Additionally, persons in the art will also realize the planning module is executed by an electronic device, thus performing related managements. Thus, the amended claims are clearly tied to a statutory class of invention, and the rejections under 35 U.S.C. 101 should be withdrawn.

Rejections under 35 U.S.C 103(a)

Claims 1-30 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Hood et al. ("Capacity planning under demand uncertainty for semiconductor manufacturing," May 2003, herein Hood) in view of Mine et al. (US Pat. 5,943,484 herein Milne) and further in view of Connors et al. (Methods for job configuration in semiconductor manufacturing", 1996, herein Connors). These rejections are respectfully traversed.

In regard to claims 1, 11 and 21, Hood, Mine and Connors do not teach or suggest the claimed combination of features. In this regard, the Hood, Mine, and Connors fail to disclose, suggest, or teach, *inter alia*, the following features recited by independent claims of the present application:

“providing a risk database recording ***risk information*** for a first demand, wherein the ***risk information comprises a first percentage of a low risk part of the first demand and a second percentage of a high risk part of the first demand, a first order rate for the low risk part, and a second order rate for the high risk part,*** wherein the high risk part is considered as an overestimated part of the first demand, and the first order rate and the second order rate are the possibility of the low risk part and the high risk part to become actual order, respectively”;

“dividing the first demand into a low risk demand and a high risk demand according to the first percentage of the low risk part and the second percentage of the high risk part, wherein the low risk demand is obtained by multiplying the first demand by the first percentage, and the high risk demand is obtained by multiplying the first demand by the second percentage”;
“determining an expected quantity of the first fabrication”; and
“managing the capacity of the first fabrication by **dispatching portions of the low risk demand and the high risk demand to the first fabrication according to the expected quantity, and the first order rate and the second order rate**, thus to allocate the capacity of the first fabrication accordingly, wherein a first quantity of the low risk demand and a second quantity of the high risk demand are dispatched to the first fabrication, and the amount of the first quantity multiplied by the first order rate and the second quantity multiplied by the second order rate is equal to or greater than the expected quantity”.

First, as an initial point, Applicant notes that the Office Action failed to set forth any responsive comments to Applicant’s previous arguments with respect to the 103 rejections. While the Office Action responded to Applicant’s remarks to the 112 and 101 rejections, no responsive comments were made to Applicant’s substantive distinctions. Therefore, Applicant continues to disagree with the Examiner for at least the reasons previously articulated.

As set forth previously, Applicant submits that the Office Action apparently misunderstands the claimed invention. In this regard, the Office Action asserted that the present invention is a method for dividing forecasted semiconductor product demand into two portions, assigning each portion a probability, and *calculating an expected quantity of demand based on the quantity of the first and second portions multiplied, respectively, with the probabilities of the first and second portions*. It is noted, in the application, the *expected quantity of demand is **not** calculated based on the quantity of the first and second portions multiplied, respectively, with the*

probabilities of the first and second portions. In the claimed embodiments, however, **the expected quantity of the first fabrication is the quantity of products expected to be produced by the first fabrication**. Additionally, in the claimed embodiments, **portions of the low risk demand and the high risk demand are dispatched to the first fabrication according to the expected quantity, and the first order rate and the second order rate.**

In the claimed embodiments, a specific demand is divided into a low risk demand and a high risk demand according to the risk information of the specific demand, wherein the *low risk demand is obtained by multiplying the first demand by the first percentage, and the high risk demand is obtained by multiplying the first demand by the second percentage. Portions of the low risk demand and the high risk demand are dispatched to a fabrication according to order rates corresponding to the low and high risk demands.*

The Office Action asserted that Hood teaches dividing forecasted demand into multiple demand scenarios representing a quantity of forecast demand, assigning each demand scenario a probability. It is understood that, in section VI. MODEL EXECUTION of the Hood reference, *Hood discloses 4 scenarios and each represents a combination of different types of products. For example, scenario S3 represents a moderate ramp of product P08 and extended plateau of mature product P09.* Additionally, ***the probability means the occurrence probability of the scenario.*** In the claimed embodiments, as described, ***a specific demand is divided into a low risk demand and a high risk demand according to the risk information of the specific demand, wherein the low risk demand is obtained by multiplying the first demand by the***

first percentage, and the high risk demand is obtained by multiplying the first demand by the second percentage. The low risk demand and high risk demand respectively have a first order rate and a second order rate. In the claimed invention, **the demand is classified as low risk and high risk demands, and the first order rate and the second order rate are the possibility of the low risk demand and the high risk demand to become actual order, respectively.** The two applications are fundamentally different.

Additionally, the Office Action asserted that Hood discloses the calculation of the expected quantity of the first fabrication. As described, in the present application, the expected quantity of the first fabrication is the quantity of products expected to be produced by the first fabrication, and is not calculated based on the quantity of the first and second portions multiplied, respectively, with the probabilities of the first and second portions. They are different.

The Office Action further asserts that Milne discloses the dispatched demand is first divided into two or more portions, and allocated according to yield expectations. It is understood that, in the Milne reference, **the parts are classified based on the critical level of components recorded in the bills of material.** Similarly, in the claimed embodiments, a specific demand is divided into a low risk demand and a high risk demand **according to the risk information of the specific demand**, wherein **the low risk demand is obtained by multiplying the first demand by the first percentage, and the high risk demand is obtained by multiplying the first demand by the second percentage.** The division manner of the two applications are significantly different. Additionally, in the Milne reference, different parts are handled

using different methods (MRP or LPMRP methods). In the application, both portions of the divided demands may be also dispatched to the same fabrication, and processed with the same manufacturing process.

The Office Action further asserted that Connors teaches determining the volume of jobs to be released into production and that demand allocation is adversely (risk) affected by yield loss in fabrication. It is clear that, in the Connors reference, the job allocation is considered the **yield loss in fabrication**, the “**risk**” asserted by the Examiner. It is understood that the risk in the Connors reference is very different from that in the claimed embodiment. In the claimed embodiment, **the high risk part can be considered as the overestimated part of a demand, and the risk means the possibility of whether the demand to become actual order**. It is well-defined in the claimed embodiment.

Nowhere in the Hood, Mine or Connors references are the claimed features taught or suggested. Since Hood, Mine and Connors fail to teach the claimed features above of the claimed embodiments, claims 1, 11 and 21 are patentable over the cited reference. Insofar as claims 2-5 depend from claim 1, claims 12-15 depend from claim 11, and claims 22-25 depend from claim 21, these dependent are similarly believed to be patentable. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988). Further, dependent claims are also patentable based on their own features.

In view of the foregoing remarks, the applicant respectfully requests the Examiner’s reconsideration of the application and the timely allowance of claims.

CONCLUSION

For at least the foregoing reasons, all claims are in condition for allowance. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone the undersigned.

A credit card authorization is provided to cover the fee associated with the accompanying RCE application. No additional fee is believed to be due in connection with this submission. If, however, any additional fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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